STIC Search Report
Biotech-Chem Library

STIC Database Tracking Number: 127255

TO: Ramin Akhavan **Location: REM/2C84/2C70** **Art Unit: 1636** **Thursday, July 22, 2004** **Case Serial Number: 10/019543**	**From: Toby Port** **Location: Biotech-Chem Library** **Remsen 1A59** **Phone: 571-272-2523** **toby.port@uspto.gov**

Search Notes

Dear Examiner Akhavan,

Here are the results of your search.
Please feel free to contact me if you have any questions.

Toby Port

STIC SEARCH RESULTS FEEDBACK FORM

Biotech-Chem Library

Questions about the scope or the results of the search? Contact ***the searcher or contact:***

Mary Hale, Information Branch Supervisor
571-272-2507 Remsen E01 D86

Voluntary Results Feedback Form

- *I am an examiner in Workgroup:* ☐ *Example: 1610*
- *Relevant prior art **found**, search results used as follows:*
  - ☐ 102 rejection
  - ☐ 103 rejection
  - ☐ Cited as being of interest.
  - ☐ Helped examiner better understand the invention.
  - ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
  (journal articles, conference proceedings, new product announcements etc.)

- *Relevant prior art **not found:***
  - ☐ Results verified the lack of relevant prior art (helped determine patentability).
  - ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to STIC/Biotech-Chem Library Remsen Bldg.

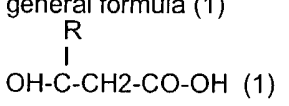
Hale, Mary 127255 / 26081

From: Akhavan, Ramin
Sent: Tuesday, July 13, 2004 3:22 PM
To: Hale, Mary
Subject: RE: 09/580,704 & 10/019543

Please search the following in 10/019543; Claims 1-3

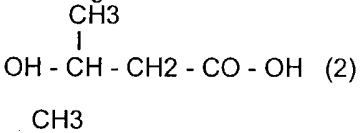
1. A transformant wherein at least one kind of gene expression cassette comprisinga polyester synthesis-associated enzyme gene hasbeen introduced into a yeast.

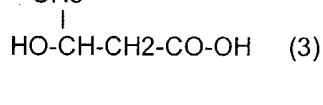
2. The transformant according to Claim 1 wherein the polyester is a copolymer resulting from the copolymerization of 3-hydroxyalkanoic acids of the following general formula (1)



in the formula,
R represents an alkyl group.

3. The transformant according to Claim 1 or 2 wherein the polyester is copolyester P(3HB-co-3HH) resulting from the copolymerization of 3-hydroxybutyric acid of the following formula (2) and 3-hydroxyhexanoic acid of the following formula





```
=> file reg; d que l6
FILE 'REGISTRY' ENTERED AT 12:18:54 ON 22 JUL 2004
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
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Property values tagged with IC are from the ZIC/VINITI data file
provided by InfoChem.

STRUCTURE FILE UPDATES:   21 JUL 2004  HIGHEST RN 714195-59-2
DICTIONARY FILE UPDATES:  21 JUL 2004  HIGHEST RN 714195-59-2

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 6, 2004

  Please note that search-term pricing does apply when
  conducting SmartSELECT searches.

Crossover limits have been increased.  See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more
information enter HELP PROP at an arrow prompt in the file or refer
to the file summary sheet on the web at:
http://www.cas.org/ONLINE/DBSS/registryss.html


L2          161 SEA FILE=REGISTRY ABB=ON  PLU=ON  300-85-6/CRN
L4           54 SEA FILE=REGISTRY ABB=ON  PLU=ON  10191-24-9/CRN
L5           22 SEA FILE=REGISTRY ABB=ON  PLU=ON  L2 AND L4
L6            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  L5 AND NC=2


=> d ide l6

L6   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2004 ACS on STN
RN   147398-31-0  REGISTRY
CN   Hexanoic acid, 3-hydroxy-, polymer with 3-hydroxybutanoic acid (9CI)  (CA
     INDEX NAME)
OTHER CA INDEX NAMES:
CN   Butanoic acid, 3-hydroxy-, polymer with 3-hydroxyhexanoic acid (9CI)
OTHER NAMES:
CN   3-Hydroxybutanoic acid-3-hydroxyhexanoic acid copolymer
CN   3-Hydroxybutyrate-3-hydroxyhexanoate copolymer
CN   3-Hydroxybutyric acid-3-hydroxyhexanoic acid copolymer
CN   Hydroxybutyric acid-3-hydroxyhexanoic acid copolymer
DR   171274-06-9, 220157-80-2
MF   (C6 H12 O3 . C4 H8 O3)x
CI   PMS
PCT  Polyester, Polyester formed
SR   CA
LC   STN Files:   CA, CAPLUS, TOXCENTER, USPAT2, USPATFULL
DT.CA  CAplus document type:  Conference; Journal; Patent
RL.P   Roles from patents:  BIOL (Biological study); FORM (Formation,
       nonpreparative); PREP (Preparation); PROC (Process); PRP (Properties);
       USES (Uses)
RL.NP  Roles from non-patents:  BIOL (Biological study); FORM (Formation,
       nonpreparative); OCCU (Occurrence); PREP (Preparation); PROC (Process);
       PRP (Properties); USES (Uses)
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CM 1

CRN 10191-24-9
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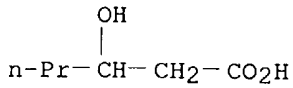
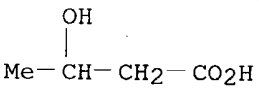


CM 2

CRN 300-85-6
CMF C4 H8 O3



97 REFERENCES IN FILE CA (1907 TO DATE)
97 REFERENCES IN FILE CAPLUS (1907 TO DATE)

=> file caplus; d que l12
FILE 'CAPLUS' ENTERED AT 12:19:21 ON 22 JUL 2004
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

FILE COVERS 1907 - 22 Jul 2004 VOL 141 ISS 4
FILE LAST UPDATED: 21 Jul 2004 (20040721/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

L2 161 SEA FILE=REGISTRY ABB=ON PLU=ON 300-85-6/CRN
L4 54 SEA FILE=REGISTRY ABB=ON PLU=ON 10191-24-9/CRN
L5 22 SEA FILE=REGISTRY ABB=ON PLU=ON L2 AND L4
L6 1 SEA FILE=REGISTRY ABB=ON PLU=ON L5 AND NC=2
L9 37 SEA FILE=CAPLUS ABB=ON PLU=ON L6 (L) PREP/RL
L10 208218 SEA FILE=CAPLUS ABB=ON PLU=ON YEAST OR AEROMONAS OR CANDIDA

L12 26 SEA FILE=CAPLUS ABB=ON PLU=ON L9 AND L10

=> d ibib ab hitind l12 1-26 Note: The bolded RN numbers refer to the structure shown on page 2

L12 ANSWER 1 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2004:333876 CAPLUS
DOCUMENT NUMBER: 140:320130
TITLE: Manufacture of copolyesters with high hydroxyhexanoate content
INVENTOR(S): Nakashima, Toshimitsu; Odawara, Osamu; Yokomizo, Satoru
PATENT ASSIGNEE(S): Kaneka Corporation, Japan
SOURCE: PCT Int. Appl., 27 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004033701	A1	20040422	WO 2003-JP13021	20031010

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: JP 2002-297602 A 20021010

AB The copolyesters (I) having high 3-hydroxyhexanoate content (i.e., ≥4 mol%) are manufactured by using lauric acid-containing fats as the C source under phosphorus limitation. The lauric acid-containing fats are selected from coconut oil, palm kernel oil, etc. Manufacture of I with recombinant Ralstonia eutropha harboring the I biosynthesis associated genes of **Aeromonas** caviae was shown.

IC ICM C12P007-62
CC 16-5 (Fermentation and Bioindustrial Chemistry)
IT **Aeromonas** caviae
Carbon sources, microbial
Culture media
Nutrition, microbial
Ralstonia eutropha
(manufacture of copolyesters with high hydroxyhexanoate content under phosphorus limitation)
IT **147398-31-0P**
RL: BPN (Biosynthetic preparation); BIOL (Biological study); **PREP (Preparation)**
(manufacture of copolyesters with high hydroxyhexanoate content under phosphorus limitation)
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 2 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2004:333875 CAPLUS
DOCUMENT NUMBER: 140:302421
TITLE: Flocculation of poly-3-hydroxyalkanoic acid (PHA)
INVENTOR(S): Ogawa, Noriko; Miyamoto, Kenji; Osakada, Fumio; Matsumoto, Keiji
PATENT ASSIGNEE(S): Kaneka Corporation, Japan
SOURCE: PCT Int. Appl., 23 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004033700	A1	20040422	WO 2003-JP12485	20030930

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: JP 2002-285864 A 20020930

AB The poly-3-hydroxyalkanoic acid (I) in the fermentation broth is flocculated with hydrophilic solvent or hydrophilic solvent water solution by suspension and agitation at a temperature below the b.p. The method does not reduce the mol.-weight of the I and is easy and simple.

IC ICM C12P007-62
ICS C08G063-89
CC 16-1 (Fermentation and Bioindustrial Chemistry)
IT **Aeromonas** caviae
Aeromonas hydrophila
Agitation (mechanical)
Biodegradable materials
Boiling point
Flocculation
Molecular weight
Suspensions
(flocculation of poly-3-hydroxyalkanoic acid (PHA) with hydrophilic solvent)
IT 121065-58-5P **147398-31-0P**
RL: PUR (Purification or recovery); **PREP (Preparation)**
(flocculation of poly-3-hydroxyalkanoic acid (PHA) with hydrophilic solvent)
REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 3 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2004:333855 CAPLUS
DOCUMENT NUMBER: 140:320126
TITLE: Control of quality of copolyester in fermentation
INVENTOR(S): Nakashima, Toshimitsu; Odawara, Osamu; Yokomizo,

Satoru
PATENT ASSIGNEE(S): Kaneka Corporation, Japan
SOURCE: PCT Int. Appl., 31 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004033670	A1	20040422	WO 2003-JP13022	20031010

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: JP 2002-297601 A 20021010

AB In the copolyester fermentation, the sp. substrate feeding rate is controlled during the fermentation to give a copolyester with desired monomer composition The substrate is selected from fats, and is used as the C source. The microorganism is selected from Ralstonia, Pseudomonas, **Aeromonas**, Alcaligenes, Escherichia, etc. Manufacture of 3-hydroxybutyrate-3-hydroxyhexanoate copolyester with enhanced 3-hydroxyhexanoate ratio with Ralstonia eutropha palm kernel oil as the C source was shown.

IC ICM C12N001-20
ICS C12N001-21; C12P007-62
CC 16-2 (Fermentation and Bioindustrial Chemistry)
IT **Aeromonas**
Alcaligenes
Biodegradable materials
Carbon sources, microbial
Escherichia
Fermentation
Pseudomonas
Ralstonia
Ralstonia eutropha
(control of substrate feeding rate in manufacture of copolyester with desired composition)
IT **147398-31-0P**
RL: BPN (Biosynthetic preparation); BIOL (Biological study); **PREP (Preparation)**
(control of substrate feeding rate in manufacture of copolyester with desired composition)
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 4 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2004:327860 CAPLUS
DOCUMENT NUMBER: 141:52933
TITLE: Metabolic engineering for the production of

copolyesters consisting of 3-hydroxybutyrate and 3-hydroxyhexanoate by **Aeromonas** hydrophila

AUTHOR(S): Qiu, Yuan-Zheng; Ouyang, Shao-Ping; Shen, Zhongyao; Wu, Qiong; Chen, Guo-Qiang

CORPORATE SOURCE: Department of Biological Sciences and Biotechnology, Tsinghua University, Beijing, 100084, Peop. Rep. China

SOURCE: Macromolecular Bioscience (2004), 4(3), 255-261
CODEN: MBAIBU; ISSN: 1616-5187

PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA

DOCUMENT TYPE: Journal

LANGUAGE: English

AB **Aeromonas** hydrophila 4AK4 was able to synthesize copolyesters consisting of 3-hydroxybutyrate (3HB) and about 15 mol-% 3-hydroxyhexanoate (3HHx) (PHBHHx) when grown in long chain fatty acids such as dodecanoate regardless of growth conditions. To regulate the unit fraction in PHBHHx, phbA and phbB genes encoding β-ketothiolase and acetoacetyl-CoA reductase in Ralstonia eutropha, were introduced into A. hydrophila 4AK4. When gluconate was used as cosubstrate of dodecanoate, the recombinant produced PHBHHx containing 3-12 mol-% 3HHx, depending on the gluconate concentration in media. Vitreoscilla Hb gene, vgb, was also introduced into the above recombinant, resulting in improved PHBHHx content from 38 to 48 weight-% in shake flask study. Fermentor studies also showed that increased gluconate concentration in medium containing dodecanoate promoted the recombinant strain harboring phbA and phbB genes to incorporate more 3HB unit into PHBHHx, resulting in reduced 3HHx fraction. Recombinant A. hydrophila harboring phbA, phbB and vgb genes demonstrated better PHBHHx productivity and higher conversion efficiency from dodecanoate to PHBHHx than those of the recombinant without vgb in fermentation study. Combined with the robust growth property and simple growth requirement, A. hydrophila 4AK4 appeared to be a useful organism for metabolic engineering.

CC 16-4 (Fermentation and Bioindustrial Chemistry)
Section cross-reference(s): 3, 10

ST **Aeromonas** recombinant polyhydroxyalkanoate fermn

IT Hemoglobins
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(Vitreoscilla; metabolic engineering for production of copolyesters consisting of 3-hydroxybutyrate and 3-hydroxyhexanoate by **Aeromonas** hydrophila)

IT Polyesters, preparation
RL: BMF (Bioindustrial manufacture); BIOL (Biological study); PREP (Preparation)
(hydroxycarboxylic acid-based; metabolic engineering for production of copolyesters consisting of 3-hydroxybutyrate and 3-hydroxyhexanoate by **Aeromonas** hydrophila)

IT **Aeromonas** hydrophila
Fermentation
(metabolic engineering for production of copolyesters consisting of 3-hydroxybutyrate and 3-hydroxyhexanoate by **Aeromonas** hydrophila)

IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(phbA; metabolic engineering for production of copolyesters consisting of 3-hydroxybutyrate and 3-hydroxyhexanoate by **Aeromonas** hydrophila)

IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(phbB; metabolic engineering for production of copolyesters consisting of

3-hydroxybutyrate and 3-hydroxyhexanoate by **Aeromonas** hydrophila)

IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(vgb; metabolic engineering for production of copolyesters consisting of 3-hydroxybutyrate and 3-hydroxyhexanoate by **Aeromonas** hydrophila)

IT 143-07-7, Dodecanoic acid, processes 527-07-1, Sodium gluconate
RL: BCP (Biochemical process); BIOL (Biological study); PROC (Process)
(metabolic engineering for production of copolyesters consisting of 3-hydroxybutyrate and 3-hydroxyhexanoate by **Aeromonas** hydrophila)

IT **147398-31-0P**
RL: BMF (Bioindustrial manufacture); BIOL (Biological study); **PREP (Preparation)**
(metabolic engineering for production of copolyesters consisting of 3-hydroxybutyrate and 3-hydroxyhexanoate by **Aeromonas** hydrophila)

IT 9028-41-5, Acetoacetyl-CoA reductase 9029-97-4, β-Ketothiolase
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(metabolic engineering for production of copolyesters consisting of 3-hydroxybutyrate and 3-hydroxyhexanoate by **Aeromonas** hydrophila)

REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 5 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2004:292104 CAPLUS
DOCUMENT NUMBER: 140:286245
TITLE: Method of purifying 3-hydroxyalkanoic acid copolymer
INVENTOR(S): Ogawa, Noriko; Miyamoto, Kenji; Osakada, Fumio; Matsumoto, Keiji
PATENT ASSIGNEE(S): Kaneka Corporation, Japan
SOURCE: PCT Int. Appl., 24 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004029266	A1	20040408	WO 2003-JP12486	20030930

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: JP 2002-285863 A 20020930

AB The high-purity 3-hydroxyalkanoic acid copolymer (I) is isolated and purified from I-producing microorganism with H2O2 in pH 7-13. The method does not decrease the mol.-weight of I and discolor the product. Isolation

and purification of D-3-hydroxybutyrate and D-3-hydroxyhexanoate copolymer was shown.

IC ICM C12P007-62
ICS C08G063-90; C12R001-01
CC 16-1 (Fermentation and Bioindustrial Chemistry)
IT **Aeromonas** caviae
Aeromonas hydrophila
Discoloration prevention
Fermentation
Molecular weight
Purification
(method for purifying 3-hydroxyalkanoic acid copolymer at alkaline pH)
IT 121065-58-5P **147398-31-0P**, 3-Hydroxybutyrate 3-hydroxyhexanoate copolymer
RL: PUR (Purification or recovery); **PREP (Preparation)**
(method for purifying 3-hydroxyalkanoic acid copolymer at alkaline pH)
REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 6 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:875436 CAPLUS
DOCUMENT NUMBER: 139:337010
TITLE: Method of separating poly-3-hydroxyalkanoic acid
INVENTOR(S): Miyamoto, Kenji; Ogawa, Noriko; Osakada, Fumio; Matsumoto, Keiji
PATENT ASSIGNEE(S): Kaneka Corporation, Japan
SOURCE: PCT Int. Appl., 19 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003091444	A1	20031106	WO 2003-JP5323	20030425

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: JP 2002-125881 A 20020426
AB A process for isolating high-purity low-mol.-weight poly-3-hydroxyalkanoic acid comprises phys. homogenize the microorganism cell suspension containing the poly-3-hydroxyalkanoic acid to crush the cells at 20-40° while continuously or intermittently adding an alkali to the suspension to control the pH to 9-13.5 and then separating out the poly-3-hydroxyalkanoic acid. The method also prevents increase of the viscosity of the fermentation broth.
IC ICM C12P007-62
ICS C12N015-09
CC 16-1 (Fermentation and Bioindustrial Chemistry)

IT **Aeromonas** caviae
Biodegradable materials
Homogenization
Ralstonia eutropha
Temperature effects, biological
pH
(method for isolation of poly-3-hydroxyalkanoate from fermentation broth by addition of alkali)
IT 121065-58-5P **147398-31-0P**, 3-Hydroxybutyrate 3-hydroxyhexanoate copolymer
RL: PUR (Purification or recovery); **PREP (Preparation)**
(method for isolation of poly-3-hydroxyalkanoate from fermentation broth by addition of alkali)
REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 7 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:690349 CAPLUS
DOCUMENT NUMBER: 139:380082
TITLE: Metabolic engineering for microbial production of copolyesters consisting of 3-hydroxybutyrate and 3-hydroxyhexanoate with adjustable 3-hydroxyhexanoate content
AUTHOR(S): Ouyang, Shao-ping; Qiu, Yuan-zheng; Lu, Xiao-yun; Wu, Qiong; Chen, Guo-qiang
CORPORATE SOURCE: Department of Biological Science and Biotechnology, Tsinghua University, Beijing, 100084, Peop. Rep. China
SOURCE: Shengwu Jiagong Guocheng (2003), 1(1), 60-65
CODEN: SJGHB9
PUBLISHER: Nanjing Gongye Daxue Shengwu Jiagong Guocheng bianjibu
DOCUMENT TYPE: Journal
LANGUAGE: Chinese
AB Copolyesters consisting of 3-hydroxybutyrate (3HB) and 3-hydroxyhexanoate (3HHx) (PHBHHx) were synthesized by two recombinant **Aeromonas** hydrophila strains. The introduction of yafH gene into A. hydrophila WQ led to an increase of 3HHx fraction in PHBHHx from 3% .apprx. 5% in the wild type strain to over 20% in the recombinant, while foreign genes of phbA and phbB genes in A. hydrophala 4AK4 decreased 3HHx fraction from 15% in the wild type to a desired level of 3% .apprx. 12% in the recombinant. Gluconate can also be used to control the 3HHx content in the copolyestes.
CC 16-5 (Fermentation and Bioindustrial Chemistry)
ST hydroxybutyrate hydroxyhexanoate copolymer manuf **Aeromonas**
IT **Aeromonas** hydrophila
Biodegradable materials
Fermentation
(metabolic engineering for microbial production of copolyesters consisting of 3-hydroxybutyrate and 3-hydroxyhexanoate with adjustable 3-hydroxyhexanoate content)
IT **147398-31-0P**, 3-Hydroxybutyrate-3-hydroxyhexanoate copolymer
RL: BPN (Biosynthetic preparation); BIOL (Biological study); **PREP (Preparation)**
(metabolic engineering for microbial production of copolyesters consisting of 3-hydroxybutyrate and 3-hydroxyhexanoate with adjustable 3-hydroxyhexanoate content)

L12 ANSWER 8 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:472628 CAPLUS
DOCUMENT NUMBER: 139:48160

TITLE: In vitro evolution of **Aeromonas** caviae PHA synthase by error-prone PCR for biosynthesis of biodegradable polyester, polyhydroxyalkanoate (PHA) copolyester
INVENTOR(S): Doi, Yoshiharu; Taguchi, Seiichi; Kichise, Tomoyasu
PATENT ASSIGNEE(S): Riken Corp., Japan
SOURCE: PCT Int. Appl., 43 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003050277	A1	20030619	WO 2002-JP12840	20021209

W: JP, US
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR
PRIORITY APPLN. INFO.: JP 2001-376237 A 20011210

AB The invention provides a process to preparation of mutant polyhydroxyalkanoate synthesis enzymes by error-prone PCR for biosynthesis of biodegradable polyester. The DNA and protein sequences of the **Aeromonas** caviae poly(β-hydroxybutyrate) synthase are disclosed. By in vitro evolution experiment, the authors have first succeeded in acquiring higher active mutants of a synthase that is a key enzyme essential for bacterial synthesis of biodegradable polyester, polyhydroxyalkanoate (PHA). **Aeromonas** caviae FA440 synthase, termed PhaCAc, was chosen as a good target for evolution, since it can synthesize a PHA random copolyester of 3-hydroxybutyrate and 3-hydroxyhexanoate [P(3HB-co-3HHx)] that is a tough and flexible material compared to polyhydroxybutyrate (PHB) homopolyester. The in vitro enzyme evolution system consists of PCR-mediated random mutagenesis targeted to a limited region of the phaCAc gene and screening mutant enzymes with higher activities based on two types of polyester accumulation system by using Escherichia coli for the synthesis of PHB (by JM109 strain) (S. Taguchi, A. Maehara, K. Takase, M. Nakahara, H. Nakamura, and Y. Doi, FEMS Microbiol. Lett. 198:65-71, 2001) and of P(3HB-co-3HHx) {by LS5218 [fadR601 atoC(Con)] strain}. The expression vector for the phaCAc gene, together with monomer-supplying enzyme genes, was designed to synthesize PHB homopolyester from glucose and P(3HB-co-3HHx) copolyester from dodecanoate. Two evolved mutant enzymes, termed E2-50 and T3-11, screened through the evolution system exhibited 56 and 21% increases in activity toward 3HB-CoA, resp., and consequently led to enhanced accumulation (up to 6.5-fold content) of P(3HB-co-3HHx) in the recombinant LS5218 strains. Two single mutations in the mutants, N149S for E2-50 and D171G for T3-11, occurred at positions that are not highly conserved among the PHA synthase family. It should be noted that increases in the 3HHx fraction (up to 16 to 18 mol%) were observed for both mutants compared to the wild type (10 mol%).

IC ICM C12N015-01
ICS C12P007-62
CC 3-2 (Biochemical Genetics)
Section cross-reference(s): 7, 16
IT Polymers, preparation
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(co-; in vitro evolution of **Aeromonas** caviae PHA synthase by error-prone PCR for biosynthesis of biodegradable polyester,

polyhydroxyalkanoate (PHA) copolyester)

IT Polyesters, preparation
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(hydroxycarboxylic acid-based; in vitro evolution of **Aeromonas** caviae PHA synthase by error-prone PCR for biosynthesis of biodegradable polyester, polyhydroxyalkanoate (PHA) copolyester)

IT **Aeromonas** caviae
Genetic engineering
Mutagenesis
PCR (polymerase chain reaction)
Protein engineering
Protein sequences
(in vitro evolution of **Aeromonas** caviae PHA synthase by error-prone PCR for biosynthesis of biodegradable polyester, polyhydroxyalkanoate (PHA) copolyester)

IT Evolution
(mol.; in vitro evolution of **Aeromonas** caviae PHA synthase by error-prone PCR for biosynthesis of biodegradable polyester, polyhydroxyalkanoate (PHA) copolyester)

IT Gene, microbial
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(phaC; in vitro evolution of **Aeromonas** caviae PHA synthase by error-prone PCR for biosynthesis of biodegradable polyester, polyhydroxyalkanoate (PHA) copolyester)

IT Gene, microbial
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(phaCAc; in vitro evolution of **Aeromonas** caviae PHA synthase by error-prone PCR for biosynthesis of biodegradable polyester, polyhydroxyalkanoate (PHA) copolyester)

IT 546147-08-4P
RL: BPN (Biosynthetic preparation); CAT (Catalyst use); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
(amino acid sequence; in vitro evolution of **Aeromonas** caviae PHA synthase by error-prone PCR for biosynthesis of biodegradable polyester, polyhydroxyalkanoate (PHA) copolyester)

IT 143-07-7, Dodecanoic acid, processes 300-85-6, 3-Hydroxybutyric acid 10191-24-9, Hexanoic acid, 3-hydroxy-
RL: BCP (Biochemical process); BIOL (Biological study); PROC (Process)
(in vitro evolution of **Aeromonas** caviae PHA synthase by error-prone PCR for biosynthesis of biodegradable polyester, polyhydroxyalkanoate (PHA) copolyester)

IT 26063-00-3P, Polyhydroxybutyrate 26744-04-7P **147398-31-0P**, 3-Hydroxybutyrate-3-hydroxyhexanoate copolymer 198007-37-3P
RL: BPN (Biosynthetic preparation); BIOL (Biological study); **PREP (Preparation)**
(in vitro evolution of **Aeromonas** caviae PHA synthase by error-prone PCR for biosynthesis of biodegradable polyester, polyhydroxyalkanoate (PHA) copolyester)

IT 61461-50-5P, Poly(β-hydroxybutyrate) synthase
RL: BPN (Biosynthetic preparation); CAT (Catalyst use); PRP (Properties); BIOL (Biological study); PREP (Preparation); USES (Uses)
(in vitro evolution of **Aeromonas** caviae PHA synthase by error-prone PCR for biosynthesis of biodegradable polyester, polyhydroxyalkanoate (PHA) copolyester)

IT 546180-72-7 546180-73-8
RL: PRP (Properties)

(unclaimed nucleotide sequence; in vitro evolution of **Aeromonas** caviae PHA synthase by error-prone PCR for biosynthesis of biodegradable polyester, polyhydroxyalkanoate (PHA) copolyester)
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 9 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:320062 CAPLUS
DOCUMENT NUMBER: 138:336527
TITLE: Biodegradable copolymeric polyester manufacture with poly(3-hydroxyalkanoate) synthase and (R)-enoyl-CoA hydratase in recombinant **yeast**
INVENTOR(S): Yokomizo, Satoru; Fukuchi, Takeshi; Osakada, Fumio; Matsumoto, Keiji; Takagi, Masamichi; Ohta, Akinori
PATENT ASSIGNEE(S): Kaneka Corporation, Japan
SOURCE: PCT Int. Appl., 77 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003033707	A1	20030424	WO 2002-JP10461	20021009

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: JP 2001-312178 A 20011010

AB A process for producing biodegradable polyesters, homopolymer or copolymer of a 3-hydroxy alkanoic acid using **yeast** as host, is disclosed. Genes for enzymes participating in the synthesis of a polyester, each having DNA encoding peroxisome-targeting signal added thereto, are constructed and an enzyme gene expression cassette is transferred into a **yeast**. 3-Hydroxybutyric acid-3-hydroxyhexanoic acid copolymers (I, H-(OCH(Me)CH2CO)m(OCH(Pr)CH2CO)nOH) are manufactured in **Candida** maltosa harboring genes for polyester polymerization enzymes of **Aeromonas** caviae. A DNA fragment containing poly(3-hydroxyalkanoate) (PHA) synthase gene (phaCAc) and (R)-enoyl-CoA hydratase gene was cloned from genomic DNA of **Aeromonas** caviae, a bacterium producing a copolyester of (R)-3-hydroxybutyrate (3HB) and (R)-3-hydroxyhexanoate (3HHx) [P(3HB-co-3HHx)] from alkanoic acids or oils. The promoter of ALK1, ALK5, or POX2 gene and terminator for ALK1 gene of **Candida** maltosa were used to express those enzymes in **Candida** maltosa. Polyhydroxyalkanoate (PHA) is a family of polymers composed primarily of R-3-hydroxyalkanoic acids. These polymers have properties of biodegradable thermoplastics and elastomers.

IC ICM C12N015-52
ICS C12N015-81; C12N001-19; C12P007-62
CC 16-4 (Fermentation and Bioindustrial Chemistry)

Section cross-reference(s): 7, 10, 37

ST biodegradable copolymeric polyester manuf **yeast**; poly hydroxyalkanoate synthase polyhydroxyalkanoate manuf; R enoyl CoA hydratase hydroxybutyrate hydroxyhexanoate copolymer

IT Gene, microbial
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(ALK1, promoter of; biodegradable copolymeric polyester manufacture with poly(3-hydroxyalkanoate) synthase and (R)-enoyl-CoA hydratase in recombinant **yeast**)

IT Gene, microbial
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(ALK5, promoter of; biodegradable copolymeric polyester manufacture with poly(3-hydroxyalkanoate) synthase and (R)-enoyl-CoA hydratase in recombinant **yeast**)

IT Gene, microbial
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(POX2, promoter of; biodegradable copolymeric polyester manufacture with poly(3-hydroxyalkanoate) synthase and (R)-enoyl-CoA hydratase in recombinant **yeast**)

IT DNA sequences
Protein sequences
cDNA sequences
(biodegradable copolymeric polyester manufacture with poly(3-hydroxyalkanoate) synthase and (R)-enoyl-CoA hydratase in recombinant **yeast**)

IT Promoter (genetic element)
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(biodegradable copolymeric polyester manufacture with poly(3-hydroxyalkanoate) synthase and (R)-enoyl-CoA hydratase in recombinant **yeast**)

IT Transit peptides
RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)
(biodegradable copolymeric polyester manufacture with poly(3-hydroxyalkanoate) synthase and (R)-enoyl-CoA hydratase in recombinant **yeast**)

IT Polymers, preparation
RL: BMF (Bioindustrial manufacture); BIOL (Biological study); PREP (Preparation)
(co-; biodegradable copolymeric polyester manufacture with poly(3-hydroxyalkanoate) synthase and (R)-enoyl-CoA hydratase in recombinant **yeast**)

IT Polyesters, preparation
Polyesters, preparation
RL: BMF (Bioindustrial manufacture); BIOL (Biological study); PREP (Preparation)
(hydroxycarboxylic acid-based; biodegradable copolymeric polyester manufacture with poly(3-hydroxyalkanoate) synthase and (R)-enoyl-CoA hydratase in recombinant **yeast**)

IT Signal peptides
(peroxisomal targeting signal; biodegradable copolymeric polyester manufacture with poly(3-hydroxyalkanoate) synthase and (R)-enoyl-CoA hydratase in recombinant **yeast**)

IT **Aeromonas** caviae

(polyester polymerization enzymes of; biodegradable copolymeric polyester manufacture with poly(3-hydroxyalkanoate) synthase and (R)-enoyl-CoA hydratase in recombinant **yeast**)

IT Genetic element
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(terminator; biodegradable copolymeric polyester manufacture with poly(3-hydroxyalkanoate) synthase and (R)-enoyl-CoA hydratase in recombinant **yeast**)

IT Plastics, preparation
RL: BMF (Bioindustrial manufacture); BIOL (Biological study); PREP (Preparation)
(thermoplastics; biodegradable copolymeric polyester manufacture with poly(3-hydroxyalkanoate) synthase and (R)-enoyl-CoA hydratase in recombinant **yeast**)

IT 130488-05-0 137338-95-5
RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)
(amino acid sequence; biodegradable copolymeric polyester manufacture with poly(3-hydroxyalkanoate) synthase and (R)-enoyl-CoA hydratase in recombinant **yeast**)

IT 300-85-6, 3-Hydroxybutyric acid 625-72-9 10191-24-9, 3-Hydroxyhexanoic acid 77877-35-1
RL: BCP (Biochemical process); BIOL (Biological study); PROC (Process)
(biodegradable copolymeric polyester manufacture with poly(3-hydroxyalkanoate) synthase and (R)-enoyl-CoA hydratase in recombinant **yeast**)

IT **147398-31-0P**, 3-Hydroxybutyrate-3-hydroxyhexanoate copolymer 198007-37-3P
RL: BMF (Bioindustrial manufacture); BIOL (Biological study); **PREP (Preparation)**
(biodegradable copolymeric polyester manufacture with poly(3-hydroxyalkanoate) synthase and (R)-enoyl-CoA hydratase in recombinant **yeast**)

IT 517924-78-6 517924-79-7 517924-80-0 517924-81-1 517924-82-2 517924-83-3 517924-84-4 517924-85-5
RL: BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); USES (Uses)
(nucleotide sequence; biodegradable copolymeric polyester manufacture with poly(3-hydroxyalkanoate) synthase and (R)-enoyl-CoA hydratase in recombinant **yeast**)

IT 517987-37-0 517987-38-1 517987-39-2 517987-40-5 517987-41-6 517987-42-7 517987-43-8 517987-44-9 517987-45-0 517987-46-1 517987-47-2 517987-48-3 517987-49-4 517987-50-7 517987-51-8 517987-52-9 517987-53-0 517987-54-1 517987-55-2
RL: PRP (Properties)
(unclaimed nucleotide sequence; biodegradable copolymeric polyester manufacture with poly(3-hydroxyalkanoate) synthase and (R)-enoyl-CoA hydratase in recombinant **yeast**)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 10 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:128903 CAPLUS
DOCUMENT NUMBER: 138:336513
TITLE: Environmental life cycle comparison of polyhydroxyalkanoates produced from renewable carbon resources by bacterial fermentation

AUTHOR(S): Akiyama, Minoru; Tsuge, Takeharu; Doi, Yoshiharu
CORPORATE SOURCE: Department of Innovative and Engineered Materials, SORST Group of Japan Science and Technology Corporation (JST), Tokyo Institute of Technology, Midori-ku, Yokohama, 226-8502, Japan
SOURCE: Polymer Degradation and Stability (2003), 80(1), 183-194
CODEN: PDSTDW; ISSN: 0141-3910
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Large-scale fermentative production of poly(3-hydroxybutyrate-co-5mol% 3-hydroxyhexanoate) [P(3HB-co-5mol% 3HHx)] from soybean oil as sole carbon source is simulated using a recombinant strain of Ralstonia eutropha harboring a polyhydroxyalkanoate (PHA) synthase gene from **Aeromonas** caviae. Its production costs, life cycle inventories (LCI) of energy consumption and carbon dioxide emissions from the cradle-to-factory gate are calculated and compared with the counterparts for microbial production of poly(3-hydroxybutyrate) [P(3HB)] from glucose as sole carbon source. In addition, the values of bio-based polymers are compared with those of petrochem. polymers. Annual production of 5000 tons of P(3HB-co-5mol% 3HHx) is estimated to cost from 3.5 to 4.5 US/kg, depending on presumed production performances. Similar scale production of P(3HB) from glucose is estimated to cost 3.8-4.2 US/kg. In contrast to the comparable production costs between P(3HB-co-5mol% 3HHx) and P(3HB), life cycle inventories of energy consumption and carbon dioxide emissions favor the former product over the latter, reflecting smaller inventories and higher production yields of soybean oil compared to glucose. The life cycle inventories of energy consumption and carbon dioxide emissions of bio-based polymers are markedly lower than those of typical petrochem. polymers.

CC 16-8 (Fermentation and Bioindustrial Chemistry)
Section cross-reference(s): 48

IT 26063-00-3P, Poly(3-hydroxybutyrate) **147398-31-0P**
RL: BMF (Bioindustrial manufacture); BIOL (Biological study); **PREP (Preparation)**
(environmental life cycle comparison of polyhydroxyalkanoates produced from renewable carbon resources by bacterial fermentation)

REFERENCE COUNT: 41 THERE ARE 41 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 11 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:910151 CAPLUS
DOCUMENT NUMBER: 138:253775
TITLE: Production of poly (3-hydroxybutyrate-co-3-hydroxyhexanoate) by **Aeromonas** hydrophila 4AK4 grown on soybean oil
AUTHOR(S): Zhang, Jin; Wu, Qiong; Zhang, Guang; Chen, Guoqiang
CORPORATE SOURCE: College of Soil and Environment, Shenyang Agricultural University, Beijing, 100084, Peop. Rep. China
SOURCE: Wuxi Qinggong Daxue Xuebao (2002), 21(1), 76-79
CODEN: WQDXF3; ISSN: 1009-038X
PUBLISHER: Wuxi Qinggong Daxue Xuebao Bianjibu
DOCUMENT TYPE: Journal
LANGUAGE: Chinese

AB Poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) (PHBHHx) was produced by **Aeromonas** hydrophila 4AK4 using soybean oil instead of lauric acid as substrate. The use of soybean oil instead of lauric acid solves the

problems in PHBHHx production such as high cost of carbon source, foaming and difficult recovery of product. In a fermentation study conducted in a 6-L NBS vessel, cell dry weight and PHBHHx concentration obtained through triple nutrient limitations on nitrogen, phosphorus and oxygen over 48 h were 19.5 g/L and 10.8 g/L when soybean was used as the only carbon source. While 42.2 g/L CDW and 16.8 g/L PHBHHx were achieved when soybean oil and lauric acid were used together as mixed carbon sources during the cultivation. The 3-hydroxyhexanoate contents in PHBHHx under all cases were rather constant; it ranged only from 10 % to 13 % after 12 h of fermns. The results showed that mixed carbon sources was more suitable for industrial production of PHBHHx.

CC 16-4 (Fermentation and Bioindustrial Chemistry)

ST hydroxybutyrate hydroxyhexanoate copolymer fermn **Aeromonas** soybean oil

IT **Aeromonas** hydrophila
Fermentation
(production of poly (3-hydroxybutyrate-co-3-hydroxyhexanoate) by **Aeromonas** hydrophila 4AK4 grown on soybean oil)

IT Soybean oil
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(production of poly (3-hydroxybutyrate-co-3-hydroxyhexanoate) by **Aeromonas** hydrophila 4AK4 grown on soybean oil)

IT **147398-31-0P**
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); BIOL (Biological study); **PREP (Preparation)**
(production of poly (3-hydroxybutyrate-co-3-hydroxyhexanoate) by **Aeromonas** hydrophila 4AK4 grown on soybean oil)

L12 ANSWER 12 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:891250 CAPLUS
DOCUMENT NUMBER: 136:4789
TITLE: Biodegradable copolymeric polyester/plastic manufacture with recombinant Alcaligenes eutrophus
INVENTOR(S): Yokomizo, Satoshi; Fukuchi, Takeshi; Odawara, Osamu; Matsumoto, Keiji; Doi, Yoshiharu
PATENT ASSIGNEE(S): Kanegafuchi Chemical Industry Co., Ltd., Japan; Institute of Physical and Chemical Research
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001340078	A2	20011211	JP 2000-164584	20000601

PRIORITY APPLN. INFO.: JP 2000-164584 20000601

AB 3-Hydroxybutyric acid-3-hydroxyhexanoic acid copolymers (I) having desired 3-hydroxyhexanoic acid mol. ratio are manufactured with A. eutrophus harboring polyester polymerization enzyme gene of **Aeromonas** caviae. The culture medium contains ≥2 different carbon sources selected from fatty acids and lipids. The method stably gives high yield. Manufacture of I with A. eutrophus PHB-4/pJRDEE32d13 was shown.

IC ICM C12N015-09
ICS C12N001-21; C12P007-62; C12R001-05

CC 16-2 (Fermentation and Bioindustrial Chemistry)
IT **Aeromonas** caviae
Carbon sources, microbial
Culture media
Fermentation
(biodegradable copolymeric polyester/plastic manufacture with recombinant Alcaligenes eutrophus)
IT **147398-31-0P**
RL: BPN (Biosynthetic preparation); BIOL (Biological study); **PREP (Preparation)**
(biodegradable copolymeric polyester/plastic manufacture with recombinant Alcaligenes eutrophus)

L12 ANSWER 13 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:851388 CAPLUS
DOCUMENT NUMBER: 136:1624
TITLE: Co-expression of polyhydroxyalkanoate synthase and (R)-enoyl-CoA hydratase genes of **Aeromonas** caviae for copolyester biosynthesis in **yeast**
INVENTOR(S): Yokomizo, Satoru; Fukuchi, Takeshi; Osakada, Fumio; Matsumoto, Keiji; Takagi, Masamichi; Ohta, Akinori
PATENT ASSIGNEE(S): Kaneka Corporation, Japan
SOURCE: PCT Int. Appl., 64 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001088144	A1	20011122	WO 2001-JP4158	20010518
W: CA, CN, ID, JP, KR, SG, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
EP 1283266	A1	20030212	EP 2001-930202	20010518
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				

PRIORITY APPLN. INFO.: JP 2000-148726 A 20000519
JP 2000-396955 A 20001227
JP 2001-16929 A 20010125
WO 2001-JP4158 W 20010518

AB A gene encoding an enzyme involved in synthesis of 3-hydroxyalkanoate (HORCHCH2COOH, I, R = alkyl) copolymd. polyester; and use in enzymic synthesis of polyester in **yeast** via fermentation, are disclosed. Use of Yarrowia lipolytica ALK3 promoter and XPR2 terminator, **Candida** maltosa ALK1 promoter and terminator, is claimed. Polyhydroxyalkanoate biosynthesis genes of **Aeromonas** caviae were expressed in **yeast**, **Candida** maltosa and Yarrowia lipolytica, and the polyhydroxyalkanoate-producing ability of the recombinants was investigated. A LS5218 strain harboring only phaCAc (polyhydroxyalkanoate synthase gene) did not accumulate any polyhydroxyalkanoate from dodecanoate in spite of the existence of translated polyhydroxyalkanoate synthase protein, whereas co-expression phaCAc and phaJAc ((R)-specific enoyl-CoA hydratase gene) resulted in the accumulation of P(3-hydroxybutyrate-co-3-hydroxyhexanoate) copolymer up to 7-11 wt% of dry cell weight from octanoate and dodecanoate. These results indicated that both phaCAc and phaJAc are essential for **yeast** to establish the

polyhydroxyalkanoate biosynthesis pathway from alkanoic acids. The copolyester content in the strain expressing both the genes under the lac promoter control reached to 38 wt% from dodecanoate. Enzyme assays suggest that efficient monomer formation via β-oxidation by a high level expression of phaJAc was important to achieve a high polyhydroxyalkanoate content in the recombinant **yeast**.

IC ICM C12N015-52
ICS C12Q001-19; C12P007-62

CC 3-2 (Biochemical Genetics)
Section cross-reference(s): 7, 10

ST **Aeromonas** gene phaCAc phaJAc sequence **yeast** coexpression copolyester biosynthesis; transformation **Candida** Yarrowia **Aeromonas** gene phaCAc phaJAc copolyester biosynthesis; polyhydroxyalkanoate synthase enoyl CoA hydratase **Aeromonas** recombinant expression **yeast**; oxidn beta enoyl CoA hydratase polyhydroxyalkanoate recombinant **yeast**

IT Promoter (genetic element)
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(ALK3, or ALK1; Co-expression of polyhydroxyalkanoate synthase and (R)-enoyl-CoA hydratase genes of **Aeromonas** caviae for copolyester biosynthesis in **yeast**)

IT **Aeromonas** caviae
Candida maltosa
DNA sequences
Fermentation
Transformation, genetic
Yarrowia lipolytica
Yeast
(Co-expression of polyhydroxyalkanoate synthase and (R)-enoyl-CoA hydratase genes of **Aeromonas** caviae for copolyester biosynthesis in **yeast**)

IT Polyesters, preparation
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(Co-expression of polyhydroxyalkanoate synthase and (R)-enoyl-CoA hydratase genes of **Aeromonas** caviae for copolyester biosynthesis in **yeast**)

IT Plasmid vectors
(pUL32; Co-expression of polyhydroxyalkanoate synthase and (R)-enoyl-CoA hydratase genes of **Aeromonas** caviae for copolyester biosynthesis in **yeast**)

IT Gene, microbial
RL: BPR (Biological process); BSU (Biological study, unclassified); BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process); USES (Uses)
(phaCAc; Co-expression of polyhydroxyalkanoate synthase and (R)-enoyl-CoA hydratase genes of **Aeromonas** caviae for copolyester biosynthesis in **yeast**)

IT Gene, microbial
RL: BPR (Biological process); BSU (Biological study, unclassified); BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process); USES (Uses)
(phaJAc; Co-expression of polyhydroxyalkanoate synthase and (R)-enoyl-CoA hydratase genes of **Aeromonas** caviae for copolyester biosynthesis in **yeast**)

IT Genetic element
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES

(Uses)
(terminator, XPR2; Co-expression of polyhydroxyalkanoate synthase and (R)-enoyl-CoA hydratase genes of **Aeromonas** caviae for copolyester biosynthesis in **yeast**)

IT **147398-31-0P**, 3-Hydroxybutyric acid-3-hydroxyhexanoic acid copolymer
RL: BPN (Biosynthetic preparation); BSU (Biological study, unclassified); MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative); **PREP (Preparation)**
(Co-expression of polyhydroxyalkanoate synthase and (R)-enoyl-CoA hydratase genes of **Aeromonas** caviae for copolyester biosynthesis in **yeast**)

IT 9027-13-8P, Enoyl-CoA hydratase 134688-88-3P, Polyhydroxyalkanoate synthase
RL: BPN (Biosynthetic preparation); CAT (Catalyst use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(Co-expression of polyhydroxyalkanoate synthase and (R)-enoyl-CoA hydratase genes of **Aeromonas** caviae for copolyester biosynthesis in **yeast**)

IT 300-85-6, 3-Hydroxybutyric acid 10191-24-9, 3-Hydroxyhexanoic acid
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(Co-expression of polyhydroxyalkanoate synthase and (R)-enoyl-CoA hydratase genes of **Aeromonas** caviae for copolyester biosynthesis in **yeast**)

IT 203402-54-4 203402-55-5 374829-24-0 374829-25-1
RL: BPR (Biological process); BSU (Biological study, unclassified); BUU (Biological use, unclassified); PRP (Properties); BIOL (Biological study); PROC (Process); USES (Uses)
(nucleotide sequence; Co-expression of polyhydroxyalkanoate synthase and (R)-enoyl-CoA hydratase genes of **Aeromonas** caviae for copolyester biosynthesis in **yeast**)

IT 134911-15-2, DNA (**Candida** maltosa clone pUC119-ADE gene C-ADE1 plus flanks) 374830-34-9, 5: PN: WO0188144 SEQID: 5 unclaimed DNA 374830-35-0, 6: PN: WO0188144 SEQID: 6 unclaimed DNA 374830-36-1, 7: PN: WO0188144 SEQID: 7 unclaimed DNA 374830-37-2 374830-38-3 374830-39-4 374830-40-7 374830-41-8 374830-42-9 374830-43-0 374830-44-1 374830-45-2 374830-46-3 374830-47-4 374830-48-5 374830-49-6
RL: PRP (Properties)
(unclaimed nucleotide sequence; co-expression of polyhydroxyalkanoate synthase and (R)-enoyl-CoA hydratase genes of **Aeromonas** caviae for copolyester biosynthesis in **yeast**)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 14 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:800488 CAPLUS
DOCUMENT NUMBER: 136:68774
TITLE: Industrial scale production of poly(3-hydroxybutyrate-co-3-hydroxyhexanoate)
AUTHOR(S): Chen, G. Q.; Zhang, G.; Park, S. J.; Lee, S. Y.
CORPORATE SOURCE: Department of Biological Sciences and Biotechnology, Tsinghua University, Beijing, 100084, Peop. Rep. China
SOURCE: Applied Microbiology and Biotechnology (2001), 57(1-2), 50-55
CODEN: AMBIDG; ISSN: 0175-7598
PUBLISHER: Springer-Verlag
DOCUMENT TYPE: Journal

LANGUAGE: English
AB Large scale production of poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) [P(3HB-co-3HHx)] by **Aeromonas** hydrophila 4AK4 was examined in a 20,000 l fermentor. Cells were first grown using glucose as a carbon source, and polyhydroxyalkanoate (PHA) biosynthesis was triggered by the addition of lauric acid under conditions of limited nitrogen or phosphorus. When cells first grown in a medium containing 50 g glucose 1-1 were further cultivated after the addition of 50 g lauric acid 1-1 under phosphorus limitation, a final cell concentration, PHA concentration and PHA content of 50 g 1-1, 25 g 1-1, and 50 wt%, resp., were obtained in 46 h, equivalent to PHA productivity of 0.54 g 1-1 h-1. The copolymer produced was found to be a random copolymer, and the 3HHx fraction was 11 mol%.
CC 16-4 (Fermentation and Bioindustrial Chemistry)
ST **Aeromonas** hydroxybutyrate hydroxyhexanoate copolymer fermn
IT **Aeromonas** hydrophila
Culture media
(industrial scale production of poly(3-hydroxybutyrate-co-3-hydroxyhexanoate))
IT **147398-31-0P**
RL: BMF (Bioindustrial manufacture); BIOL (Biological study); **PREP (Preparation)**
(industrial scale production of poly(3-hydroxybutyrate-co-3-hydroxyhexanoate))
REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 15 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:612265 CAPLUS
DOCUMENT NUMBER: 135:341404
TITLE: Study of microbial polyhydroxyalkanoates using two-dimensional fourier-transform infrared correlation spectroscopy
AUTHOR(S): Wu, Qiong; Tian, Ge; Sun, Suqin; Noda, Isao; Chen, Guo-Qiang
CORPORATE SOURCE: Department of Biological Sciences and Biotechnology, Tsinghua University, Beijing, 100084, Peop. Rep. China
SOURCE: Journal of Applied Polymer Science (2001), 82(4), 934-940
CODEN: JAPNAB; ISSN: 0021-8995
PUBLISHER: John Wiley & Sons, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The premelting behavior of bacterially synthesized polyester poly(3-hydroxybutyrate-co-3-hydroxyhexanoate), abbreviated as P(HB-co-HHx), was investigated by two-dimensional Fourier-transform IR (2D FTIR) correlation spectroscopy. The temperature-dependent dynamic spectra were measured over a temperature range of 25-300°C. We focused our study on the thermally induced intensity fluctuations of bands for C=O (1700-1760 cm-1), C-H (2910-3010 cm-1) and C-O-C groups (1220-1310 cm-1) stretching vibrations. Changes of crystalline conformation due to the thermal perturbation could be detected by the intensity and location variations of those characteristic bands responding to the variations of dipole moments. 2D correlation anal. indicated that the appearance of fully amorphous component did not happen simultaneously with the disappearance of crystalline component, suggesting that there was an intermediate state between ordered crystalline and amorphous states in P(HB-co-HHx).
CC 10-6 (Microbial, Algal, and Fungal Biochemistry)

Section cross-reference(s): 26
IT **Aeromonas** hydrophila
Fusion enthalpy
Phase transition
(study of microbial polyhydroxyalkanoates using two-dimensional fourier-transform IR correlation spectroscopy)
IT **147398-31-0P**, 3-Hydroxybutanoic acid-3-hydroxyhexanoic acid copolymer
RL: BOC (Biological occurrence); BSU (Biological study, unclassified); PRP (Properties); PUR (Purification or recovery); BIOL (Biological study); OCCU (Occurrence); **PREP (Preparation)**
(study of microbial polyhydroxyalkanoates using two-dimensional fourier-transform IR correlation spectroscopy)
REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 16 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:312440 CAPLUS
DOCUMENT NUMBER: 134:326930
TITLE: Medium chain length polyhydroxyalkanoate copolymer and process for its production
INVENTOR(S): Green, Phillip Richard
PATENT ASSIGNEE(S): The Procter & Gamble Company, USA
SOURCE: U.S., 8 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6225438	B1	20010501	US 2000-495441	20000131
WO 2001055436	A1	20010802	WO 2001-US2992	20010130

W: AE, AG, AL, AM, AT, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, CZ, DE, DE, DK, DK, DM, DZ, EE, EE, ES, FI, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2000-495441 A 20000131
AB This invention relates to polymer production and in particular to a novel copolymer and a process for microbiol. producing the same. More specifically this invention provides for a poly-3-hydroxyalkanoate (PHA) that includes medium length 3-hydroxyacyl monomers and a process comprising culturing a microorganism with a medium chain fatty carbon source and a fatty acid oxidation inhibitor (e.g, Na acrylate). This invention allows the use of microorganisms which normally incorporate only short chain fatty acids to produce PHAs containing short and medium chain 3-hydroxyacyl monomers. The purpose of this invention is to produce a more versatile PHA polymer which includes C6, C7 and/or C8 3-hydroxyacyl monomers.
IC ICM C08G063-06
ICS C12D007-62

NCL 528361000
CC 35-5 (Chemistry of Synthetic High Polymers)
IT **Aeromonas**
Azotobacter
Bacilli
Clostridium
Halobacterium
Nocardia
Pseudomonas
Ralstonia
Ralstonia eutropha
Zoogloea
(medium chain length polyhydroxyalkanoate copolymer and process for its production)
IT **147398-31-0P**, 3-Hydroxybutanoic acid-3-hydroxyhexanoic acid copolymer 159680-53-2P, 3-Hydroxybutanoic acid-3-hydroxyhexanoic acid-3-hydroxyoctanoic acid copolymer
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(medium chain length polyhydroxyalkanoate copolymer and process for its production)
REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 17 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:156627 CAPLUS
DOCUMENT NUMBER: 134:192307
TITLE: Extraction method for poly-3-hydroxyalkanoic acid (PHA)
INVENTOR(S): Odawara, Osamu; Miyamoto, Kenji; Yokomizo, Satoshi; Matsumoto, Keishi
PATENT ASSIGNEE(S): Kanegafuchi Chemical Industry Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001057895	A2	20010306	JP 1999-233656	19990820

PRIORITY APPLN. INFO.: JP 1999-233656 19990820
AB The PHA-harboring microorganism such as Alcaligenes eutrophus is extracted with solvent. The solvent extract is incubated with metal salt and/or surfactant to flucculate the undissolved microorganism debris to enable efficient separation of the PHA. Extraction of D-3-hydroxybutyrate-D-3-hydroxyhexanoate copolymer from recombinant A. eutrophus was shown.
IC ICM C12P007-62
CC 16-1 (Fermentation and Bioindustrial Chemistry)
IT **Aeromonas** caviae
Fermentation
Flocculation
Ralstonia eutropha
Solvent extraction
Surfactants
(extraction method for poly-3-hydroxyalkanoic acid (PHA))
IT 26063-00-3P, Poly-3-hydroxybutyrate 121065-58-5P **147398-31-0P**
RL: BPN (Biosynthetic preparation); PUR (Purification or recovery); BIOL

(Biological study); **PREP (Preparation)**
(extraction method for poly-3-hydroxyalkanoic acid (PHA))

L12 ANSWER 18 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:123066 CAPLUS
DOCUMENT NUMBER: 134:161988
TITLE: Surfactants in isolation of Poly-3-hydroxyalkanoate
INVENTOR(S): Odawara, Osamu; Miyamoto, Kenji; Yokomizo, Satoshi; Matsumoto, Keishi
PATENT ASSIGNEE(S): Kanegafuchi Chemical Industry Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001046094	A2	20010220	JP 1999-226841	19990810

PRIORITY APPLN. INFO.: JP 1999-226841 19990810
AB Poly-3-hydroxyalkanoate-containing fermentation broth is mixed with surfactant, and
the mixture subjected to phys. homogenization to obtain the poly-3-hydroxyalkanoate (I). The method is low in cost, easy, and highly efficient. The product thus obtained has high purity. Isolation of I from fermentation broth of recombinant Alcaligenes eutrophus harboring the I-synthesized enzyme genes of **Aeromonas** caviae was shown.
IC ICM C12P007-62
ICS C12P007-62; C12R001-05
CC 16-1 (Fermentation and Bioindustrial Chemistry)
IT **Aeromonas** caviae
Ralstonia eutropha
Surfactants
(surfactants in isolation of Poly-3-hydroxyalkanoate)
IT 121065-58-5P **147398-31-0P**
RL: BPN (Biosynthetic preparation); BIOL (Biological study); **PREP (Preparation)**
(surfactants in isolation of Poly-3-hydroxyalkanoate)

L12 ANSWER 19 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:146 CAPLUS
DOCUMENT NUMBER: 134:192282
TITLE: Characterization of 13 kDa Granule-Associated Protein in **Aeromonas** caviae and Biosynthesis of Polyhydroxyalkanoates with Altered Molar Composition by Recombinant Bacteria
AUTHOR(S): Fukui, Toshiaki; Kichise, Tomoyasu; Iwata, Tadahisa; Doi, Yoshiharu
CORPORATE SOURCE: Polymer Chemistry Laboratory, RIKEN Institute, Wako-shi Saitama, 351-0198, Japan
SOURCE: Biomacromolecules (2001), 2(1), 148-153
CODEN: BOMAF6; ISSN: 1525-7797
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Anal. of native poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) [P(3HB-co-3HHx)] inclusions from **Aeromonas** caviae FA440 revealed

that ORF1 (a 348-bp gene located immediately upstream of phaCAc) encodes a 13-kDa granule-associated protein, which was referred to as phaPAc. Several recombinant strains of A. caviae were constructed and conducted to analyze their PHA-producing abilities. A transconjugant of FA440 harboring addnl. copies of phaPCJAc genes accumulated P(3HB-co-3HHx) copolyesters with much higher 3HHx composition (46-63 mol %) than wild-type strain from alkanoates or olive oil. Deletion anal. revealed that overexpression of phaJAc encoding monomer-supplying (R)-hydratase was not a reason for the compositional change in the recombinant strains. PHA synthase activity in PHA inclusion fraction from the transconjugant composed of 60 mol % of 3HHx was 10-fold higher than that from the strain FA440 with 13 mol % of 3HHx, suggesting an importance of the level of PHA synthase activity for controlling the PHA composition in vivo.

CC 16-4 (Fermentation and Bioindustrial Chemistry)
Section cross-reference(s): 3, 10

ST **Aeromonas** granule assocd protein polyhydroxyalkanoate biosynthesis

IT **Aeromonas** caviae
Pseudomonas putida
(13 kDa granule-associated protein in **Aeromonas** caviae and biosynthesis of polyhydroxyalkanoates with altered molar composition by recombinant bacteria)

IT Organelle
(granule; 13 kDa granule-associated protein in **Aeromonas** caviae and biosynthesis of polyhydroxyalkanoates with altered molar composition by recombinant bacteria)

IT Gene, microbial
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(phaC; 13 kDa granule-associated protein in **Aeromonas** caviae and biosynthesis of polyhydroxyalkanoates with altered molar composition by recombinant bacteria)

IT Gene, microbial
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(phaJ; 13 kDa granule-associated protein in **Aeromonas** caviae and biosynthesis of polyhydroxyalkanoates with altered molar composition by recombinant bacteria)

IT Proteins, specific or class
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(phaP, GA13; 13 kDa granule-associated protein in **Aeromonas** caviae and biosynthesis of polyhydroxyalkanoates with altered molar composition by recombinant bacteria)

IT Gene, microbial
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(phaP; 13 kDa granule-associated protein in **Aeromonas** caviae and biosynthesis of polyhydroxyalkanoates with altered molar composition by recombinant bacteria)

IT 9027-13-8, Enoyl-CoA hydratase
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
((R)-specific; 13 kDa granule-associated protein in **Aeromonas** caviae and biosynthesis of polyhydroxyalkanoates with altered molar composition by recombinant bacteria)

IT 134688-88-3

RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(13 kDa granule-associated protein in **Aeromonas** caviae and biosynthesis of polyhydroxyalkanoates with altered molar composition by recombinant bacteria)

IT **147398-31-0P**
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); BIOL (Biological study); **PREP (Preparation)**
(13 kDa granule-associated protein in **Aeromonas** caviae and biosynthesis of polyhydroxyalkanoates with altered molar composition by recombinant bacteria)

IT 10191-24-9, 3-Hydroxyhexanoic acid
RL: BOC (Biological occurrence); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); OCCU (Occurrence); PROC (Process)
(13 kDa granule-associated protein in **Aeromonas** caviae and biosynthesis of polyhydroxyalkanoates with altered molar composition by recombinant bacteria)

IT 527-07-1, Sodium gluconate 629-25-4, Sodium dodecanoate 822-12-8, Sodium tetradecanoate 1984-06-1, Sodium octanoate 10051-44-2, Sodium hexanoate
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(13 kDa granule-associated protein in **Aeromonas** caviae and biosynthesis of polyhydroxyalkanoates with altered molar composition by recombinant bacteria)

REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 20 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:826282 CAPLUS
DOCUMENT NUMBER: 134:146464
TITLE: Production of Poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) by Metabolically Engineered Escherichia coli Strains
AUTHOR(S): Park, Si Jae; Ahn, Woo Suk; Green, Phillip R.; Lee, Sang Yup
CORPORATE SOURCE: Metabolic and Biomolecular Engineering National Research Laboratory Department of Chemical Engineering and BioProcess Engineering Research Center, Korea Advanced Institute of Science and Technology, Yusong-gu Taejon, 305-701, Japan
SOURCE: Biomacromolecules (2001), 2(1), 248-254
CODEN: BOMAF6; ISSN: 1525-7797
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Recombinant Escherichia coli strains harboring a plasmid containing a novel artificial polyhydroxyalkanoate (PHA) operon consisting of the **Aeromonas** PHA biosynthesis related genes and Ralstonia eutropha reductase gene were developed for the production of poly(3-hydroxybutyrate-co-hydroxyhexanoate) [P(3HB-co-3HHx)] from dodecanoic acid. By applying stepwise reduction of dissolved oxygen concentration (DOC) during the fermentation, the final dry cell weight, PHA concentration, and PHA content of 79 g/L, 21.5 g/L, and 27.2 wt %, resp., were obtained in 40.8 h, which resulted in the PHA

productivity of 0.53 (g/L)/h. The 3HHx fraction slowly increased during the fed-batch culture to reach a final value of 10.8 mol %. The 3HHx fraction in the copolymer could be increased by 3-fold when the **Aeromonas** hydrophila orf1 gene was coexpressed with the PHA biosynthesis genes.

CC 16-4 (Fermentation and Bioindustrial Chemistry)
Section cross-reference(s): 3

IT **147398-31-0P**
RL: BMF (Bioindustrial manufacture); BSU (Biological study, unclassified); MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative); **PREP (Preparation)**
(poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) production by metabolically Engineered Escherichia coli)

REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 21 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:419779 CAPLUS
DOCUMENT NUMBER: 133:192050
TITLE: Fed-batch culture of **Aeromonas** hydrophila for the production of poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) using two carbon sources
AUTHOR(S): Lee, Young; Lee, Seung Hwan; Lee, Sang Yup
CORPORATE SOURCE: Department of Chemical Engineering and BioProcess Engineering Research Center, Korea Advanced Institute of Science and Technology, Taejon, 305-701, S. Korea
SOURCE: Biotechnology and Bioprocess Engineering (1999), 4(3), 195-198
CODEN: BBEIAU; ISSN: 1226-8372
PUBLISHER: Korean Society for Biotechnology and Bioengineering
DOCUMENT TYPE: Journal
LANGUAGE: English

AB To produce polyhydroxyalkanoate (PHA) copolymer which consists of 3-hydroxybutyrate (3HB) and 3-hydroxyhexanoate (3HHx) by cultivation of **Aeromonas** hydrophila, fed-batch cultures were done under several nutrient limiting conditions. With the results from flask cultures, fed-batch cultures were carried out to produce large amts. of PHA. In the fed-batch culture, firstly glucose was fed to grow cell, and then, oleic acid fed to stimulate PHA in the cell. The final cell concentration, PHA content, PHA concentration, and 3-hydroxy-hexanoate fraction in 38 h were 48.9 g/L, 15.05 wt%, 7.36 g/L and 12.2 wt%, resp., resulting in the productivity of 0.19 g/L-h under phosphate-limiting condition.

CC 16-4 (Fermentation and Bioindustrial Chemistry)

ST **Aeromonas** fed batch fermn hydroxybutyrate hydroxyhexanoate copolymer prodn

IT Fermentation
(fed-batch; production of poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) using two carbon sources during fed-batch culture of **Aeromonas** hydrophila)

IT **Aeromonas** hydrophila
Culture media
Growth, microbial
Optimization
(production of poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) using two carbon sources during fed-batch culture of **Aeromonas** hydrophila)

IT 7447-40-7, Potassium chloride, biological studies 7786-30-3, Magnesium chloride, biological studies 10034-99-8, Magnesium sulfate heptahydrate

12125-02-9, Ammonium chloride, biological studies 14265-44-2, Phosphate, biological studies
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(production of poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) using two carbon sources during fed-batch culture of **Aeromonas** hydrophila)

IT **147398-31-0P**
RL: BMF (Bioindustrial manufacture); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); **PREP (Preparation)**; PROC (Process)
(production of poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) using two carbon sources during fed-batch culture of **Aeromonas** hydrophila)

IT 300-85-6, 3-Hydroxybutyric acid 10191-24-9, 3-Hydroxy-hexanoic acid
RL: BOC (Biological occurrence); BSU (Biological study, unclassified); BIOL (Biological study); OCCU (Occurrence)
(production of poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) using two carbon sources during fed-batch culture of **Aeromonas** hydrophila)

IT 26063-00-3P, Polyhydroxybutyrate
RL: BOC (Biological occurrence); BSU (Biological study, unclassified); BYP (Byproduct); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation)
(production of poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) using two carbon sources during fed-batch culture of **Aeromonas** hydrophila)

IT 50-99-7, Dextrose, biological studies 112-80-1, Oleic acid, biological studies 143-07-7, Lauric acid, biological studies 526-95-4, Gluconic acid 7664-41-7, Ammonia, biological studies
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(production of poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) using two carbon sources during fed-batch culture of **Aeromonas** hydrophila)

IT 1310-73-2, Sodium hydroxide, biological studies
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(production of poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) using two carbon sources during fed-batch culture of **Aeromonas** hydrophila)

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 22 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:27406 CAPLUS
DOCUMENT NUMBER: 132:179631
TITLE: Production of poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) by high-cell-density cultivation of **Aeromonas** hydrophila
AUTHOR(S): Lee, Seung Hwan; Oh, Dong Hyun; Ahn, Woo Suk; Lee, Young; Choi, Jong-Il; Lee, Sang Yup
CORPORATE SOURCE: Department of Chemical Engineering and Bioprocess Engineering Research Center, Korea Advanced Institute of Science and Technology, Taejon, 305-701, S. Korea
SOURCE: Biotechnology and Bioengineering (2000), 67(2), 240-244

CODEN: BIBIAU; ISSN: 0006-3592
PUBLISHER: John Wiley & Sons, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The newly screened **Aeromonas** hydrophila produces a copolymer consisting of 3-hydroxybutyrate (3HB) and 3-hydroxyhexanoate (3HHx). The characteristics of cell growth and polymer accumulation were examined using various carbon sources. P(3HB-co-3HHx) was produced from lauric acid and oleic acid only. P(3HB-co-3HHx) content can be increased by limitation of phosphorus. A maximal P(3HB-co-3HHx) content of 28.8 wt% could be obtained in flask culture. By applying the optimally designed nutrient feeding strategy, the cell dry weight, P(3HB-co-3HHx) content, and 3HHx fraction obtained over the course of 43 h were 95.7 g/L, 45.2 wt%, and 17 mol%, resp., resulting in a productivity of 1.01 g polyhydroxyalkanoate (PHA)/L · h.
CC 16-4 (Fermentation and Bioindustrial Chemistry)
ST **Aeromonas** polyhydroxybutyratehydroxyhexanoate manuf
IT **Aeromonas** hydrophila
Fermentation
(production of poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) by **Aeromonas** hydrophila)
IT 112-80-1, Oleic acid, biological studies 143-07-7, Lauric acid, biological studies
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(in production of poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) by **Aeromonas** hydrophila)
IT **147398-31-0P**
RL: BMF (Bioindustrial manufacture); BIOL (Biological study); **PREP (Preparation)**
(production of poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) by **Aeromonas** hydrophila)
IT 300-85-6 10191-24-9, 3-Hydroxyhexanoic acid
RL: BOC (Biological occurrence); BSU (Biological study, unclassified); BIOL (Biological study); OCCU (Occurrence)
(production of poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) by **Aeromonas** hydrophila)
REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 23 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1998:307163 CAPLUS
DOCUMENT NUMBER: 129:42127
TITLE: Biodegradable laminates, packaging materials and containers with improved impact, water, and crack resistance
INVENTOR(S): Shioya, Takehisa
PATENT ASSIGNEE(S): Kanegafuchi Chemical Industry Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10128920	A2	19980519	JP 1996-303836	19961029

JP 3537274 B2 20040614
PRIORITY APPLN. INFO.: JP 1996-303836 19961029
AB The title laminates comprising substrates laminated with 3-hydroxybutyrate (I) and 3-hydroxyhexanoate (II) copolymers on ≥1 sides are used as packaging materials and containers. Thus, **Aeromonas** caviae was cultured in a medium containing 2% olive oil and 2% **yeast** extract at 30° for 48 h to give I-II copolymer, which was applied on 1 side of a paper board to give a test piece showing good adhesion strength and biodegradability. The test piece was molded to a cup and filled with H2O without leaking.
IC ICM B32B027-28
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 16
ST biodegradable laminate packaging material container; hydroxybutyrate hydroxyhexanoate copolymer prepn water resistance; **Aeromonas** caviae polyester manuf paper laminate
IT **Aeromonas** hydrophila
(preparation of biodegradable laminates for packaging materials and containers by using)
IT **Aeromonas** caviae
(preparation of biodegradable laminates for packaging materials and containers from polyesters produced with)
IT **147398-31-0P**, 3-Hydroxybutyric acid-3-Hydroxyhexanoic acid copolymer
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); PRP (Properties); TEM (Technical or engineered material use); BIOL (Biological study); **PREP (Preparation)**; USES (Uses)
(preparation of biodegradable laminates for packaging materials and containers by using)

L12 ANSWER 24 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1998:294560 CAPLUS
DOCUMENT NUMBER: 129:40189
TITLE: Efficient production of polyhydroxyalkanoates from plant oils by Alcaligenes eutrophus and its recombinant strain
AUTHOR(S): Fukui, T.; Doi, Y.
CORPORATE SOURCE: Polymer Chemistry Laboratory, Institute of Physical and Chemical Research, Saitama, 351-0198, Japan
SOURCE: Applied Microbiology and Biotechnology (1998), 49(3), 333-336
CODEN: AMBIDG; ISSN: 0175-7598
PUBLISHER: Springer-Verlag
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The ability of Alcaligenes eutrophus to grow and produce polyhydroxyalkanoates (PHA) on plant oils was evaluated. When olive oil, corn oil, or palm oil was fed as a sole carbon source, the wild-type strain of A. eutrophus grew well and accumulated poly(3-hydroxybutyrate) homopolymer up to approx. 80% (weight/weight) of the cell dry weight during its stationary growth phase. In addition, a recombinant strain of A. eutrophus PHB-4 (a PHA-neg. mutant), harboring a PHA synthase gene from **Aeromonas** caviae, was revealed to produce a random copolyester of 3-hydroxybutyrate and 3-hydroxyhexanoate from these plant oils with a high cellular content (approx. 80% weight/weight). The mole fraction of 3-hydroxyhexanoate units was 4-5 mol% whatever the structure of the triglycerides fed. The polyesters produced by the A. eutrophus strains from olive oil were 200-400 kDa (the number-average mol. mass). The results

demonstrate that renewable and inexpensive plant oils are excellent carbon sources for efficient production of PHA using A. eutrophus strains.
CC 16-5 (Fermentation and Bioindustrial Chemistry)
IT 26063-00-3P, Poly(3-hydroxybutyrate) **147398-31-0P**
RL: BMF (Bioindustrial manufacture); BIOL (Biological study); **PREP (Preparation)**
(production of polyhydroxyalkanoates from plant oils by Alcaligenes eutrophus)
REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L12 ANSWER 25 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1995:999674 CAPLUS
DOCUMENT NUMBER: 124:23320
TITLE: Preparation of transgenic **Aeromonas** for the preparation of copolymers of 3-hydroxybutyrate and 3-hydroxyhexanoate
INVENTOR(S): Shiomi, Hisafumi
PATENT ASSIGNEE(S): Kanegafuchi Chemical Ind, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 07265065	A2	19951017	JP 1994-84084	19940329
PRIORITY APPLN. INFO.:			JP 1994-84084	19940329

AB The gene involved with the biosynthesis of 3-hydroxybutyrate-3-hydroxyhexanoate-copolymer was isolated from **Aeromonas** caviae strain FA440 and transfected into strain AC004, a mutant deficient in polyester biosynthesis, to obtain a transformed strain AC118. Strain AC118 produced 0.6 polyester g/g dried bacteria when cultured in a medium containing palmitic acid as a sole C source, as compared to 0.08 of strain FA440. The activities of β-ketothiolase and acetoacetyl CoA reductase in strain AC118 were also higher than that of strain FA440, which suggested that both genes were simultaneously introduced into the recipient AC004. The transgenic **Aeromonas** is useful in manufacturing low-cost raw materials for the production of fats, oils, and fatty acids.
IC ICM C12N001-21
ICS C12N015-09; C12P007-62
ICI C12N001-21, C12R001-01; C12P007-62, C12R001-01
CC 3-1 (Biochemical Genetics)
Section cross-reference(s): 10, 37
ST hydroxybutyrate hydroxyhexanoate copolymer prepn **Aeromonas**
IT Fatty acids, miscellaneous
RL: MSC (Miscellaneous)
(preparation of transgenic **Aeromonas** for the preparation of copolymers of 3-hydroxybutyrate and 3-hydroxyhexanoate for production of)
IT **Aeromonas**
(preparation of transgenic **Aeromonas** for the production of copolymers of 3-hydroxybutyrate and 3-hydroxyhexanoate)
IT Fats and Glyceridic oils
RL: MSC (Miscellaneous)
(preparation of transgenic **Aeromonas** for the production of copolymers of 3-hydroxybutyrate and 3-hydroxyhexanoate)

IT **Aeromonas** caviae
(strain AC118; preparation of transgenic **Aeromonas** for the production of copolymers of 3-hydroxybutyrate and 3-hydroxyhexanoate)
IT **147398-31-0P**
RL: BPN (Biosynthetic preparation); BIOL (Biological study); **PREP (Preparation)**
(preparation of transgenic **Aeromonas** for the production of copolymers of 3-hydroxybutyrate and 3-hydroxyhexanoate)
IT 9028-41-5, Acetoacetyl CoA reductase 9029-97-4, β-Ketothiolase
RL: MSC (Miscellaneous)
(transgenic **Aeromonas** for the preparation of copolymers of 3-hydroxybutyrate and 3-hydroxyhexanoate containing gene for)

L12 ANSWER 26 OF 26 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1995:649863 CAPLUS
DOCUMENT NUMBER: 123:81680
TITLE: Biosynthesis and characterization of poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) from oils and fats by **Aeromonas** sp.OL-338 and **Aeromonas** sp.FA-440
AUTHOR(S): Kobayashi, Genta; Shiotani, Takeshi; Shima, Yu; Doi, Yoshiharu
CORPORATE SOURCE: Research Institute, Kaneka Corporation, Takasago, 676, Japan
SOURCE: Studies in Polymer Science (1994), 12(Biodegradable Plastics and Polymers), 410-16
CODEN: SPLSEA; ISSN: 0922-5579
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The authors screened the bacteria which have a capability to utilize oils and fats from the soil or activated sludge. As a result, 58 strains that accumulated some polyester in those cells were isolated from 466 strains that utilized oils and fats. Among the 58 strains, two strains (OL-338 strain and FA-440 strain) were found that they can accumulate the copolyester of 3-hydroxybutyrate (3HB) and 3-hydroxyhexanoate (3HHx) in these cells, and also found that they are both belong to aeromonad. The above copolymer was synthesized when the fatty acid more than twelve carbon number is given as a carbon source in the cultivation and the thermal property of this copolymer was different from that of P(3HB-co-3HV) or P(3HB-co-4HB).
CC 16-5 (Fermentation and Bioindustrial Chemistry)
ST polyhydroxyalkanoate fermn **Aeromonas**
IT Fatty acids, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(C≥12; biosynthesis and characterization of poly(hydroxybutyrate hydroxyhexanoate) copolymer from oils and fats by **Aeromonas** sp.OL-338 and **Aeromonas** sp.FA-440)
IT **Aeromonas**
Fermentation
(biosynthesis and characterization of poly(hydroxybutyrate hydroxyhexanoate) copolymer from oils and fats by **Aeromonas** sp.OL-338 and **Aeromonas** sp.FA-440)
IT **147398-31-0P**
RL: BPN (Biosynthetic preparation); BIOL (Biological study); **PREP (Preparation)**
(biosynthesis and characterization of poly(hydroxybutyrate hydroxyhexanoate) copolymer from oils and fats by **Aeromonas** sp.OL-338 and **Aeromonas** sp.FA-440)

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